



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/045,895	10/29/2001	Stephen Keeta Park	2000.029996/TT3586C	3826

23720 7590 08/28/2003

WILLIAMS, MORGAN & AMERSON, P.C.
10333 RICHMOND, SUITE 1100
HOUSTON, TX 77042

EXAMINER

LEE, HSIEN MING

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 08/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/045,895

Applicant(s)

PARK, STEPHEN KEETAI

Examiner

Hsien-Ming Lee

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20, 41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20, 41 and 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

1. The objection to specification, claims 6, 11 and 16, 112-second-paragraph rejection to claims 1 and 7 and double patenting rejection, as set forth in the previous Office action, are withdrawn.
2. Claims 1-20, 41 and 42 are pending in the application.

Claim Objections

3. Claim 1 is objected to because of the following informalities: in-consistent term.

At line 15, " above the structure" should be -- above the structure **layer** --.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 1-20, 41 and 42 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 21-24 of U.S. Patent No. 6,303,486.

Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons as follow.

The following list is a comparison regarding limitations between the instant invention and the Patent:

the instant invention	the Patent
1. forming a <i>first sacrificial dielectric layer</i> above a <i>structure layer</i> and adjacent a contact;	forming a <i>first dielectric layer</i> above a <i>structure layer</i> ;
2. forming a <i>second sacrificial dielectric layer</i> above the first sacrificial dielectric layer and the <i>contact</i> ;	forming a sacrificial dielectric layer above the first dielectric layer and above the copper via ;
3. forming <i>an opening</i> in the second sacrificial dielectric layer, wherein at least a portion of the opening is <i>above</i> at least a portion of the <i>contact</i> ;	forming a second opening in the sacrificial dielectric layer above at least a portion of the copper via ;
4. forming a <i>copper layer</i> above the second sacrificial dielectric layer and <i>in the opening</i> ;	forming a copper line in the second opening , the copper line contacting the at least the portion of the copper via;
5. forming the copper interconnect by removing portions of the copper layer above the second sacrificial dielectric layer, leaving the copper interconnect in the opening;	planarizing a second dielectric layer (claim 23); wherein the second dielectric layer is formed above the first dielectric layer and adjacent to the copper line (claim 22);

- | | |
|--|--|
| 6. <i>removing the first and second sacrificial dielectric layers;</i> | removing the sacrificial dielectric layer above the first dielectric layer (claim 21), i.e. inherently removing the sacrificial dielectric layer and the second dielectric layer; |
| 7. forming a <i>low dielectric constant dielectric layer</i> above the structure and adjacent the copper interconnect and the contact; and | forming a second dielectric layer, a low dielectric constant material , adjacent to the copper line (claims 22 and 23); and |
| 8. forming and patterning a <i>mask layer</i> above the low dielectric constant dielectric layer to have a mask layer opening above at least a portion of the copper interconnect (claim 4). | forming and patterning a mask layer above the second dielectric layer to have a mask layer opening above at least a portion of the second copper structure (claim 24). |

From the above comparison, it would have been obvious that a first dielectric layer of the Patent is equivalent to a first sacrificial dielectric layer of the instant invention; that a first sacrificial dielectric layer of the Patent is equivalent to a second sacrificial dielectric layer of the instant invention; that a copper via of the Patent is equivalent to a contact of the instant invention and that the low dielectric constant layer of the instant invention is equivalent to the second

Art Unit: 2823

dielectric layer of the Patent. In addition, the features as shown in Figs. 15-16 of the Patent are equivalent to that of Figs. 5-6 of the instant invention.

Therefore, it would have been obvious to one of the ordinary skill in the art, at the time the invention was made, to recognize that both instant invention and the Patent claim a common subject matter, regardless the obvious variations, i.e. using different terms for describing same subject matters.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hsien-Ming Lee whose telephone number is 703-305-7341. The examiner can normally be reached on M-F (9:00 ~ 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

August 19, 2003

Hsien-Ming Lee
Examiner
Art Unit 2823

